Biodiesel as Part of Sustainable Energy, Emission Control
and Economic Development Policy
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I. What is Biodiesel?

Biodiesel is a renewable, biodegradable resource which can be effectively utilized as part of a sustainable energy policy for any region of the United States. Biodiesel has been designated as an alternative fuel by the U.S. Department of Energy[1] and is registered with the U.S. Environmental Protection Agency[2]. It is virtually nontoxic and has been listed by the U.S. Food and Drug Administration as a food processing agent for human consumption[3]. As a substitute for, or additive to, petroleum diesel it can reduce emissions of NOX, CO, hydrocarbons and particulates[4]. Standards for the composition of biodiesel are set by the National Biodiesel Board, a nonprofit corporation funded through the U.S. Department of Agriculture, and are consistent with proposed provisional standards established by ASTM[5].

Biodiesel is made from first use and used vegetable oils, and tallow. The first diesel engines developed by Dr. Rudolph Diesel were run on peanut oil. Biodiesel can be used in modern diesel engines without conversion which means that the existing infrastructure, including vehicles and fueling facilities, can be used with little or no modification[6]. In comparison to other alternative fuels, such as natural gas or electricity, the cost of implementing biodiesel is substantially less, especially when considering the cost of new vehicles, fueling facilities and the retraining of support and maintenance personnel[7]. As an energy efficient solution to our current consumption habits, the National Renewable Energy Laboratory has estimated that on a life cycle basis, for every unit of energy used to produce biodiesel from first use vegetable oil, four units of energy are created. Preliminary

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[1] "Alternatives to Traditional Transportation Fuels 1995," Energy Information Administration, Office of Coal, Nuclear, Electric and Alternative Fuels, U.S. Department of Energy, Washington, D.C. 20585, page 30, 34, 36 & 37.

[2] "Alternatives to Traditional Transportation Fuels 1995" page 30

[3] "The Biodiesel Industry in the United States," National Biodiesel Board, P.O. Box 104898, Jefferson City, MO 65110

[4] "Alternatives to Traditional Transportation Fuels 1995" page 30 & footnote 20 therein.

[5] "Biodiesel Fuel Standard Making Progress" page 16-19 of ASTMStandardization News, April 1997, by Steve Howell

[6] "Biodiesel: A Technology, Performance and Regulatory Overview," National Biodiesel Board, P.O. Box 104898, Jefferson City, MO 65110, and "Biodiesel Fuel: What Is It? And Can It Compete?" Congressional Research Service #93-1027, Library of Congress, Washington, D.C.

[7] "Another Fuel for the Future: The Biodiesel Alternative," Fred Murphy, President of the Florida Pupil Transport Association, Lakleland, FL and supporting analysis by Ching-Ming Tseng, Vice President of Research and Development, NOPEC Corporation, 1316 George Jenkins Blvd., Lakeland, FL

conclusions suggest that this ratio may be as high as one unit of energy input for ten units of energy created when used cooking oils are the primary feed stock[8].

European countries emphasize the use of biodiesel as part of their energy and environmental policies. In France all diesel fuel is composed of a 5% blend of biodiesel. In the United States, extensive testing of biodiesel in over 30,000,000 miles of use as a 20% blend with petroleum diesel, has shown biodiesel blends to be road worthy and environmentally friendly substitutes for pure petroleum diesel[9].

Feedstocks for biodiesel in the U.S. include over 22 billion pounds of first use vegetable oils such as soy oil, peanut oil, canola oil and others9. Perhaps the most significant source of vegetable oil for a regional sustainable energy policy is the use of used cooking oils from restaurants. It is estimated by the National Restaurant Association that there are over 376,571 restaurants in the United States[10] which produce an average of 150 gallons of waste oil per month from fryer operations. This yields nearly 3,000,000,000 gallons of waste oil feedstock per year. Currently the U.S. uses approximately 32 billion gallons of petroleum diesel per year[11]. With the combination of first use and used vegetable oil, there are more than sufficient quantities of renewable and biodegradable oil feedstocks to make a 20% blend of biodiesel feasible for all U.S. diesel energy uses, including mass transit, school buses, rail, marine and trucking.

Use of biodiesel on a broad scale would reduce U.S. dependence on foreign energy sources. Policies to encourage the use and production of biodiesel should be developed and encouraged. These policies should include industrial revenue bonds for biodiesel plant development, mandatory used oil recycling requirements, favorable tax treatment and other incentives for the use of biodiesel blends in public and private transport.

III. Biodiesel Development Corporation's Compliance Assistance Program

Biodiesel Development Corporation offers a complete biodiesel support program that solves a large number of regulatory problems with a single fleetwide technology. In addition to supplying biodiesel fuel and fuel additives, Biodiesel Development Corporation can assist fleet managers in many ways to develop cost-effective biodiesel regulatory solutions:

● Compliance support services, including the use of proprietary analytical computer models to assess the most cost-effective alternative fuel strategy.

● Assistance in the writing of Alternative State Plans (ASP's) for filing with

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[8] National Renewable Energy Laboratory, John Sheehan, 1617 Cole Blvd., Golden, CO 80401

[9] "The Biodiesel Industry in the United States," National Biodiesel Board, P.O. Box 104898, Jefferson City, MO 65110

[10] National Restaurant Association, Information Services Hotline, Washington, D.C., based upon 1994 U.S. Census data

[11] "Alternatives to Traditional Transportation Fuels 1995" page 36

the U.S. Department of Energy (USDOE) under the Energy Policy Act of 1992 (EPACT).

● An Aftermarket Alternative Fuel Vehicle Conversion Program that includes Biodiesel Development Corporation's unique Aftermarket Warranty to enable users of Biodiesel Development Corporation Biodiesel to qualify for Alternative Fueled Vehicle credits (AFV's) under the provisions of EPACT.

● Assistance in meeting Environmental Protection Agency and Clean Air Act Amendment of 1990 emission reduction and air quality standards.

A. Compliance Support Services

As part of its services to potential customers, Biodiesel Development Corporation can provide a spreadsheet analysis for individual fleets. The analysis covers varying strategies for complying with EPA and USDOE requirements through the use of alternative fuels. Cost comparisons and life cycle expenses are used to show the least-cost method for fleets to comply with these sometimes complicated and expensive federal mandates.

B. Alternative State Plans

EPACT requires states to begin purchasing alternative fueled vehicles this year. The number of AFV's a state must purchase is determined by the number of light-duty vehicles being acquired by the state. However, there are options available to a state under provisions for the filing of Alternative State Plans (ASP's) with the USDOE. In specific circumstances, these options allow a state to:

● Earn AFV credits for the acquisition of medium-duty and heavy-duty alternative fueled vehicles,

● Bank excess AFV credits earned in one year to be used in satisfaction of purchase requirements in following years,

● Sell or trade banked AFV credits to another state, and/or,

● Count AFV acquisitions by municipalities toward meeting the state's AFV acquisition requirements.

Biodiesel Development Corporation offers assistance in the cost-effective development and filing of Alternative State Plans that maximize benefits to state customers, while minimizing compliance problems.

C. Aftermarket Warranty

Biodiesel Development Corporation offers a unique Aftermarket Warranty for vehicles fueled with BDC Biodiesel. The coverage under this warranty can be used to qualify a vehicle for AFV credits.

The BDC Aftermarket Warranty provides coverage concurrent with, and equivalent to, warranty coverage provided by the original manufacturer of the vehicle, but which is specific to the use of biodiesel as an approved alternative fuel as defined by USDOE. Under the BDC Aftermarket Warranty Program, proof of warranty coverage for each vehicle covered is provided by NOPEC on annual basis for each year that the original manufacturer's warranty

is in place, or beyond that if the vehicle is newly acquired but no longer covered by the original manufacturer's warranty. As a condition for issuing the warranty, BDC requires the use of biodiesel in the covered vehicle.

D. State Implementation Plans and Air Quality Standards

The Clean Air Act Amendments of 1990 requires states to file State Implementation Plans (SIP's) which describe emission reduction strategies for non-attainment areas.

Biodiesel has been shown to significantly reduce key regulated emissions, such as particulate matter (PM), hydrocarbons (HC and VOC), carbon monoxide CO) and nitrous oxides[12] (NOX). These emissions are already certified for transit bus applications, and can be expanded to other centrally fueled fleet applications such as school bus fleets, U.S. Postal Service fleets, locomotives and stationary engine sources. The flexibility of biodiesel technology permits an airshed to select an efficient clean air management technique and obtain cost effective SIP revisions.

Biodiesel Development Corporation will work with your state to quantify emission reductions while simultaneously qualifying those fleets as alternatively fueled vehicles.

IV. Biodiesel Plants as Part of Regional Economic Development

Biodiesel Development Corporation's proprietary technology can be used to develop multi-feedstock biodiesel plants in almost any area of the world. In the U.S. these plants are ideally suited for "Brownfield Areas" and "Enterprise Zones." These biodiesel plants are low impact, clean redevelopment projects that:

- reduces pollution through the recycling of waste cooking oil,
- reduces the regions's balance of payment deficit for importing petroleum,
- produces a product which is used to reduce air pollution.

A local biodiesel can also help reduce the cost of using biodiesel in your fleets by eliminating long distance transportation costs. Plant construction usually runs about $1 to $2 per annual gallon of capacity, depending upon the local economic incentive packages available. Biodiesel Development Corporation is evaluating plant locations throughout the United States. If you are interested please give us a call.

V. For More Information, Contact:

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[12] "Alternatives to Traditional Transportation Fuels 1995" page 30 & footnote 20 therein.